

Proposed In-Use Stationary Diesel Agricultural Engine Requirements

Public Meeting Colusa/Durham
July 26, 2006



California Environmental Protection Agency



Air Resources Board

Background - Diesel Exhaust Particulate Matter (Diesel PM)

- Diesel PM Toxic Air Contaminant (TAC) 1998
 - ▶ Cancer
 - ▶ Noncancer Adverse Health Effects: premature death, lung irritation and allergic reactions, asthma exacerbation, heart disease
- Other Diesel Exhaust Pollutants
 - ▶ Arsenic, benzene, formaldehyde, and other TACs: cancer, reproductive/developmental problems, eye and lung irritation
 - ▶ Oxides of Nitrogen (NO_x) + Volatile Organic Compounds (VOC) = Ozone: premature death, lung irritation, bronchitis, emphysema, crop loss, other environmental and material deterioration

Background - Stationary Diesel Engine Regulation

- Diesel Risk Reduction Plan October 2000
- Board Adopts Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines (ATCM) February 2004
 - ▶ Board Directs Staff to Investigate In-Use Agricultural Engine Regulation
 - ▶ ATCM Emission Limits for New Agricultural Engines Effective January 2005, Revised September 2005
- San Joaquin and South Coast Districts Adopt NOx Rules June 2005

Proposed Regulation Applicability

- Diesel-fueled Engine
- Greater Than 50 HP
- Used in Agriculture



Proposed Regulation Applicability (continued)

- Stationary
 - ▶ Permanently mounted, or
 - ▶ Located at a single site more than 12 consecutive months, * or
 - ▶ If seasonal operation, located at a single site 3 or more consecutive months for each of 2 or more consecutive years*

* "Site" means a specific location at the farm. Time spent by another engine at the site is included.

Examples of Stationary Engines

- A trailer-mounted pump engine is operated at the same site* for 3 months year after year
- A trailer-mounted pump engine is operated at the same site* for 3 months year after year, but a different engine is used each year



Proposed Regulation Applicability (continued)

- Exceptions:
 - ▶ Does Not Apply to Agricultural (Ag.) Wind Machines
 - ▶ Ag. Emergency Standby Generator Sets Are Exempt from Emission Limits

Proposed Regulation Applicability (continued)

- Primarily Expected to Affect Stationary Diesel Ag. Irrigation Pump Engines
 - ▶ 8,600 Statewide
 - ▶ Emissions
 - Diesel PM : 850 TPY
 - NOx: 12,800 TPY
- Also Expected to Apply to a Few Stationary Ag. Non-Emergency Generator Set Engines



Proposed Emission Limits Based On Off-Road CI Engine Certification Standards for New Engines

- Certified Engines Comply With Tier 1-4 Standards Phased In From 1996-2015
- Noncertified or “Tier 0” Engines Do Not Comply With Standards (e.g., Pre-1996 Engines)
- A Standard for Any Given Engine Is Based on Engine Size (Horsepower) and Model Year
- PM and Other Air Pollutant Standards Become More Stringent Over Time

Proposed Non-certified In-Use Stationary Diesel Ag. Engine PM Emission Limits

Non-certified (Tier 0) Engine HP	Off-Road Engine Cert. Standard	Proposed ATCM Compliance
>50 - 99	Tier 3 or 4 Jan. 1, 2008	Dec. 31, 2011
100 -174	Tier 3 Jan. 1, 2007	Dec. 31, 2010
175 - 750	Tier 3 Jan. 1, 2006	Dec. 31, 2010
>750	Tier 4 Jan. 1, 2011	Dec. 31, 2014

Proposed T1,T2-Certified In-Use Stationary Diesel Ag. Engine PM Emission Limits

Tier 1 or Tier 2 Certified Engine HP	Off-Road Engine Cert. Standard	Proposed ATCM Compliance
>50 - 174	Tier 4 Jan. 1, 2012	Dec. 31, 2015*
≥175	Tier 4 Jan. 1, 2011	Dec. 31, 2014*

* or 12 years after initial installation

Proposed Emission Limits for Other Pollutants

- Emission Limits for Other Pollutants (NO_x, NMHC+NO_x, HC, and CO)
- Based on Engine Model Year and HP, Required to Meet Off-Road Engine Certification Standard Tier 1-4 Levels



Examples of Requirements

- 1995 Tier 0 Engine, 200 Horsepower
 - ▶ By December 31, 2010, replace with electric motor, Tier 3 engine, or
 - ▶ Meet equivalent Tier 3 PM standard and Tier 1 standards for NOx and other pollutants
- 2005 Tier 2 Engine, 100 Horsepower
 - ▶ By December 31, 2017, replace with electric motor, Tier 4 engine, or
 - ▶ Meet equivalent Tier 4 PM standard and Tier 2 standards for NOx and other pollutants
- Engine Replacement Is the Expected Compliance Strategy

Reasons to Use Engine Replacement as the Compliance Strategy

- Multiple Pollutant Emission Reductions
- Verified PM Control Devices Available for Tier 1 or Later Engines Only
- Incentive Programs
- Existing San Joaquin Valley and South Coast District NOx Rules Primarily Rely on Engine Replacement

More Stringent PM Emission Limits Near Residential Areas

- Tier 3 Engine May Result in Unacceptable Cancer Risk for Engines Located Near a Neighboring Residence or Residences
- Alternatives: Electrify, Tier 4-Compliant Engine, Tier 3 Engine Plus Retrofit Device, Relocate Engine, Spark-ignited Engine, and/or Alternative Fuels



Proposed Reporting Requirements

- Purpose of Reporting:
 - ▶ Outreach,
 - ▶ Target Incentive Funding,
 - ▶ Promote Equity
- No Reporting Required If Districts Already Have Information



Proposed Reporting Requirements (continued)

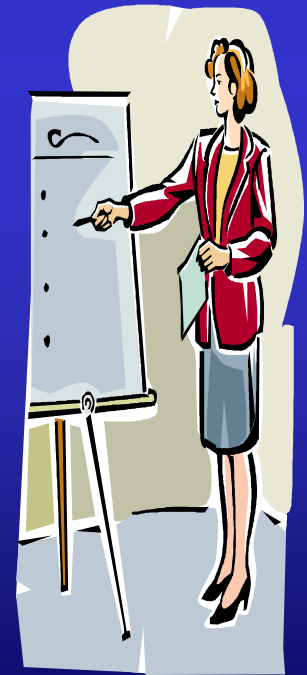
- General Reporting Requirements
 - ▶ Owner/Operator contact information
 - ▶ Engine make, model, serial number, size
 - ▶ General description of engine location
 - ▶ Estimated engine operating hours and fuel use (if non-diesel fuel is used)
- Reporting for Engines Near Receptors
 - ▶ Estimated distance and direction from engine to receptor
 - ▶ Specific engine and/or receptor location

Other Proposed Amendments

- ARB Staff Propose to Add In-Use Ag. Engine Requirements to the Existing Stationary Compression Ignition Engine ATCM
- Other Proposed Amendments Primarily Clarify Definitions, Requirements, and Acceptable Technologies for Non-Ag. Engines

Regulatory Process - Next Steps

- July 27, 2006 - Public Workshop, Sacramento
- Sept. 2006 - Staff Report, 45-Day Public Review and Comment
- Oct. 19, 2006 - Board Hearing
- Spring 2007 - Office of Administrative Law Review, Effective



Further Information

- Webpage: <http://www.arb.ca.gov/diesel/ag/inuseag.htm>
- List Serve: <http://www.arb.ca.gov/listserv/inuseag.htm>
- Richard Boyd, Manager, Process Evaluation Section, (916) 322-8285 or rboyd@arb.ca.gov; or
- Barbara Cook, Staff, Process Evaluation Section, (916) 323-0440 or bcook@arb.ca.gov

